G-000-1006.33

3644

PROGRESS REPORT OPERABLE UNIT 3 PRODUCTION AREA JULY 1992

07/01/92

4
FACT SHEET

[redacted]

3644

Fernald Project Remedial Investigation/ Feasibility Study

PROGRESS REPORT JULY 1992

Operable Unit 3
PRODUCTION AREA

Robert Janke
DOE Manager,
Operable Unit 3
738-6883

Introduction

The Remedial Investigation/Feasibility Study (RI/FS) is the blueprint for cleanup at the U.S. Department of Energy's Fernald Environmental Management Project (FEMP). The nature and extent of contamination at the FEMP and surrounding areas is being thoroughly investigated so that appropriate remedial actions can be formulated and implemented.

The FEMP has been divided into five sections, known as Operable Units, for environmental investgation and cleanup. The Operable Units were defined based on their location or the potential for similar technologies to be used in the ultimate cleanup.

During the course of the RI/FS effort, certain conditions are occasionally identified which call for more immediate action. These actions are called "Removal Actions" and are initiated when there is a need to accelerate cleanup activities to address releases or potential releases of hazardous substances. Removal Actions are coordinated with the U.S. EPA and the Ohio EPA.

Following is a progress report on Operable Unit 3 including its history, the current status of RI/FS activities, cleanup alternatives under consideration, and work being done to alleviate near-term concerns.

Background

Operable Unit 3, the former production area and other suspect areas, is one of the largest and most complex of the FEMP Operable Units, largely due to the wide variety of former processing facilities located in this 136-acre study area. When the mission at the FEMP was production of high-purity uranium metal for U.S. Defense Programs and the processing of thorium to support other DOE programs, large quantities of radioactive materials and hazardous chemicals were used in the various plants involved in the process. Operable Unit 3 focuses on cleanup of contamination that occurred in the former production area as a result of the 37-year production mission at the FEMP. The primary contaminant is uranium, and the main focal points of cleanup are buildings, equipment and support facilities.

RI/FS Activities

RI/FS Work Plan Addendum: The 1991 Amended Consent Agreement significantly expanded the definition of Operable Unit 3. The scope of Operable Unit 3 was modified to include all former process buildings, structures and equipment, and inventoried materials. A task team defined the sampling requirements and technical analyses which must be completed to support the Operable Unit 3 RI/FS process, and that information was incorporated into the RI/FS Work Plan Addendum for Operable Unit 3.

The RI/FS Work Plan Addendum for Operable Unit 3 was submitted to the U.S. EPA and the Ohio EPA on May 29, 1992, for review and approval. EPA is expected to comment on or approve the four-volume document by July 29, 1992.

The Work Plan Addendum includes an evaluation of available site characterization data and process knowledge, and identifies the need for additional data to evaluate risks and remedial alternatives. The addendum also includes discussions on the various RI/FS tasks required, and schedules for conducting those activities.

The Work Plan Addendum also includes a recommended approach to be used in data collection, a proposed sampling and analysis plan, preliminary remedial action objectives, and remedial action alternatives. Planning for the implementation of the work plan is in progress. Approximately 24 months of field characterization work is anticipated for Operable Unit 3.

Removal Actions

Contaminated Water Beneath FEMP Buildings (Removal Action No. 1): This Removal Action was initiated to minimize the potential for uranium-contaminated groundwater to infiltrate the underlying aquifer from perched water zones located beneath some former production buildings. "Perched" water is that which is isolated in pockets of groundwater which reside within the layers of clay-rich glacial soils that exist above the Great Miami Buried Valley Aquifer in the regional area of the FEMP. Perched water zones of concern due to the volume of water present and the concentration of contaminants have been identified

beneath Plants 6, 2/3, 8, and 9 in the former production area. To minimize the potential for the movement of contaminants in these zones to the underlying aquifer, a series of wells were installed to extract the groundwater for treatment prior to discharge.

Pumping operations are in progress at all locations. A treatment system at Plant 8 continues to remove volatile organic compounds (VOCs) from the extracted water as necessary. The treatment system uses activated carbon filters to remove the VOCs. The water is then processed through the FEMP's existing treatment system for the removal of uranium and eventually discharged to the Great Miami River. As of July 1, 1992, more than 180,000 gallons of extracted perched groundwater has been processed through the treatment system. Approximately 5,000 gallons are being treated each week.

Plant 1 Pad Continuing Release (Removal Action No. 7): The purpose of this Removal Action is to protect surface soils and regional groundwater from continuing releases of hazardous materials resulting from waste management activities on the eight-acre Plant 1 storage pad. This Removal Action is being conducted in three phases.

Phase I, the implementation of run-on and run-off control measures and the installation of underground utilities, is complete.

Phase II work, on schedule for completion by December 21, 1992, involves the installation of a new covered concrete storage pad (80,000 square feet) to be built adjacent to the existing Plant 1 storage pad. Soil excavation for Phase II work was completed in May 1992, and post-excavation sampling of the Phase II area continues. Installation of the Phase II concrete pad is approximately 50 percent complete.

Phase III involves activities to upgrade the existing Plant 1 storage pad, including the installation of a polyethylene liner and epoxy coating over the pad surface to minimize contaminant migration to the environment. Phase III is on schedule for completion by February 21, 1995.

Covered storage structures planned for the Plant 1 storage pad will be equipped with containment facilities for spill control, drainage, stormwater runoff and run-on control, and fire suppression.

Removal of Waste Inventories (Removal Action No. 9): This Removal Action involves the characterization, overpacking, and disposition of low-level radioactive waste materials. The removal of waste inventories is ongoing at the FEMP.

The FEMP received approval from the DOE-Nevada Operations Office to dispose of five general waste streams at the Nevada Test Site (NTS), including: process area scrap wastes (scrap metal and wood); construction and Removal Action waste (demolition debris); residues and thorium waste (refinery feed and oxides); and baled trash. The approval includes all backlog and currently-generated wastes at the FEMP, which can be shipped to NTS for disposal contingent upon meeting all NTS Waste Acceptance Criteria.

The first shipment of 38 drums of low-level thorium waste (oxides) arrived at NTS June 12, 1992. Approximately two truck shipments per week are planned for the 1,624 drums of low-level thorium waste approved for disposal at NTS.

As of July 1, 1992, more than 74,000 drum equivalents of low-level waste had been shipped to NTS in Fiscal Year 1992. (A drum equivalent is 7.4 cubic feet, the volume of a 55-gallon drum). The DOE Fiscal Year 1992 goal is to ship 100,000 drum equivalents to NTS by the end of September 1992.

Stabilization of Uranyl Nitrate Inventories (Removal Action No. 20): The processing of uranyl nitrate inventories is scheduled to begin in mid-July 1992. Operational readiness reviews and safety systems checks were conducted in June 1992. Uranyl nitrate is an intermediate product in the former uranium recovery process at the FEMP. There are approximately 230,000 gallons of acidic uranyl nitrate stored in 21 tanks in or near the Plant 2/3 Refinery.

A 1991 inspection of the tanks revealed that small leaks had developed in the piping system associated with the tanks. This Removal Action is designed to process the uranyl nitrate to a stable form.

Refinery systems integrity testing is complete. The uranyl nitrate inventory will be neutralized and converted to a solid form which can be drummed and properly stored in warehouses pending final disposition.

Safe Shutdown (Removal Action No. 12): This Removal Action was initiated to ensure the safe and permanent shutdown of production facilities including the removal of uranium and other process/raw materials from equipment and lines in the former production area. Disposition of uranium products and recoverable residues is an integral part of Safe Shutdown activities.

Preliminary assessments of the scope of actions required to achieve a safe shutdown configuration of buildings and equipment have been completed for Plants 1, 2/3, 4, 8, and 9. Assessments for Plants 5, 6, and the Pilot Plant are now in progress.

An annual update of FEMP procedures to ensure that appropriate documentation of Safe Shutdown activities is entered into the Administrative Record was submitted to the U.S. EPA on June 30, 1992.

So far, more than 2.6 million pounds of uranium products have been transferred from the FEMP under the Safe Shutdown program since the production mission ended.

Plant 1 Ore Silos (Removal Action No. 13): A revised work plan was submitted to the U.S. EPA on March 27, 1992. Conditional approval of the work plan was received from the Ohio EPA on April 13, 1992, and from the U.S. EPA on May 18, 1992.

The project will involve the dismantling of the Plant 1 Ore Silos and their support structures. Deteriorated valves caused the silos to leak material onto a concrete pad in February 1992. The material, known as cold raffinate, is the waste residue from the processing of uranium ore after uranium is removed. Remaining material in the silos will be removed, containerized and placed in safe storage pending final disposition. All 14 silos and support structures will be dismantled and demolished under this Removal Action.

Design work was completed May 6, 1992. Field activities are scheduled to begin in October 1992, and this Removal Action is on schedule for completion by December 18, 1993.

Contaminated Soils Adjacent to Sewage Treatment Plant Incinerator (Removal Action No. 14): The scope of this Removal Action will include the isolation or removal and disposition of contaminated soils with elevated levels of uranium in the vicinity of an out-of-service solid waste incinerator at the sewage treatment plant. The project is designed to mitigate the potential for contaminant migration. Activities will include characterization, removal, containerization, storage and disposal of materials. A revised work plan for this Removal Action, incorporating U.S. EPA comments, was submitted to the U.S. EPA on March 30, 1992. Conditional approval of the work plan was received from the U.S. EPA on May 18, 1992. Design work is now in progress. Excavation of contaminated soils is on schedule for completion by August 18, 1992.

Scrap Metal Piles (Removal Action No. 15): This Removal Action will address the stabilization and disposition of low-level radioactive waste scrap metal currently stockpiled outdoors at the FEMP. The project is designed to eliminate the potential threat of material releases to the environment due to wind or rain from 1,300 tons of scrap copper and about 3,000 tons of recoverable scrap metals. Comments on the work plan were received from the U.S. EPA on March 4, 1992. A revised work plan, incorporating U.S. EPA comments, was submitted to the U.S. EPA on April 3, 1992. Conditional approval of the work plan was received from the U.S. EPA on May 18, 1992. A contract was awarded June 19, 1992, to Scientific Ecology Group, Inc., of Oak Ridge, Tenn., for the final disposition of 2,210 tons of ferrous scrap metal. Most of the 2,210 tons will be reused. Non-recoverable scrap metal is presently being packaged into appropriate containers and shipped off site for disposal under Removal Action No. 9 (Removal of Waste Inventories).

Improved Storage of Soil and Debris (Removal Action No. 17): Improved storage for soils contaminated with low-level radioactive materials or petroleum products, and contaminated debris, will be managed under this Removal Action. Activities under this Removal Action will include characterization, interim storage, and management of contaminated soils and debris until their final remediation under Operable Unit 3. The work plan was submitted to the U.S. EPA on March 25, 1992, for review and approval.

Plant 7 Dismantling (Removal Action No. 19): The work plan for this Removal Action is due to the U.S. EPA by April 20, 1993. The characterization plan is currently in progress. Plant 7 was originally built to convert uranium hexafluoride (UF6) to uranium tetrafluoride (UF4). Plant 7 has been idle since the mid-1950s, when it was replaced by operations in the Pilot Plant. All process equipment was removed from Plant 7 in the late 1950s. Plant 7 is presently being used for storage of empty cans and drums. Activities under this Removal Action will involve decontamination and dismantling of the building.

Pilot Plant Sump (Removal Action No. 24): This Removal Action was initiated to address contaminated liquids and sludges remaining in an out-of-service sump at the FEMP's Pilot Plant. The below-grade sump is a stainless steel cylinder approximately two feet in diameter and 10 feet deep. The sump was installed to remove liquids from the floor drains of the Pilot Plant and was actively used only during the renovation of the Pilot Plant in 1969. Analytical results show high concentrations of metals (lead, copper, chromium, and nickel), as well as thorium and volatile organic compounds. The work plan for this Removal Action is on schedule to be submitted to the U.S. EPA by July 31, 1992.

Nitric Acid Tank Car and Area (Removal Action No. 25): This Removal Action was initiated to remove the residual contents of a Nitric Acid Tank Car, decontaminate and dispose of the tank car itself, and address potentially contaminated surrounding soils related to the tank car. The high-grade stainless steel tank car was operated from 1952 until 1989 and stored nitric acid, which was formerly used at the FEMP. The tank car has a capacity of 100,000 pounds and now contains approximately 100 gallons of dilute nitric acid. The work plan for this Removal Action is due to the U.S. EPA by October 30, 1992.

Asbestos Removals (Asbestos Program) (Removal Action No. 26): This Removal Action documents ongoing asbestos abatement activities at the FEMP to mitigate the potential for contaminant release and migration. Abatement activities within the existing Asbestos Program include repairs, encasement, encapsulation or removal of asbestos-bearing

materials which exist in many buildings on the FEMP site. A proposed work procedures document was submitted to the U.S. EPA on May 19, 1992, for review and approval. Field activities in support of asbestos identification and abatement are in progress.

Management of Contaminated Structures at the FEMP (Removal Action No. 27): This Removal Action was initiated to address contaminated structures and mitigate any potential threat to human health and the environment associated with any contaminated structures at the FEMP. Characterization data are being gathered and required work activities are being formulated in support of the Removal Action. An Engineering Evaluation/Cost Analysis (EE/CA) to support the identification of additional Removal Actions for managing contaminated structures at the FEMP is due to the U.S. EPA by December 15, 1992.

Cleanup Alternatives

Several cleanup alternatives have been identified for Operable Unit 3. All of these options include regular maintenance and monitoring. Much of the cleanup work involves the disposal of inventoried waste materials in either an on-site or an off-site disposal facility, removal and decontamination of buildings and equipment, and disposal of remaining contaminated materials in approved, engineered facilities either at the FEMP or off site. Implicit within all Operable Unit 3 alternatives is an emphasis on the recycling and recovery of building materials and equipment to minimize waste disposal requirements. More definitive descriptions of alternatives will be provided in subsequent reports, pending U.S. EPA approval of the Operable Unit 3 Work Plan Addendum.

More information about Operable Unit 3 is available in the Public Environmental Information Center (PEIC), where Fernald Environmental Management Project cleanup documents are kept in the Administrative Record. The PEIC is located in the JAMTEK building, 10845 Hamilton-Cleves Highway, Harrison, Ohio, 45030. The telephone number is (513) 738-0164.